

Amendments to the Specification:

Please replace the first paragraph of the Specification under Related Applications on Page 1, with the following rewritten paragraph:

Related Applications

This application is a continuation application of U.S. Patent Application Serial No. 09/850,554, filed May 7, 2001 (incorporated herein by reference), entitled "Heart Wall Actuation Device for the Natural Heart," now U.S. Patent No. 6,592,619, which is a continuation-in-part application of U.S. Patent Application Serial No. 09/326,416, filed June 4, 1999 (incorporated herein by reference), entitled "Device and Method for Restructuring Heart Chamber Geometry," now U.S. Patent No. 6,520,904, which is a continuation-in-part application of United States Patent Application, Serial No. 09/316,611, filed May 21, 1999 (incorporated herein by reference), entitled "Device and Method for Restructuring Heart Chamber Geometry," now abandoned, which is a continuation-in-part U.S. Patent Application Serial No. 09/165,887, filed September 30, 1998 (incorporated herein by reference), entitled "Device and Method for Restructuring Heart Chamber Geometry," now U.S. Patent No. 6,221,103, which is a continuation-in-part United States Patent Application, Serial No. 08/581,914, filed ~~December 23~~ January 2, 1997 (incorporated herein by reference), entitled "Activation Device for the Natural Heart and Method of Doing the Same" (now U.S. Patent No. 5,957,977), which is a continued prosecution application of United States Patent Application, Serial No. 08/581,914, filed on January 2, 1996 (incorporated herein by reference).

Please replace the paragraph beginning on page 3, at line 16, with the following rewritten paragraph:

An alternative procedure also involves replacement of the [hart]heart and includes a transplant of a heart from another human or animal into the patient. The transplant procedure requires removing an existing organ (i.e. the natural heart) from the patient for substitution with another organ (i.e. another natural heart) from another human, or potentially, from an animal. Before replacing an existing organ with another, the substitute organ must be “matched” to the recipient, which can be, at best, difficult, time consuming, and expensive to accomplish. Furthermore, even if the transplanted organ matches the recipient, a risk exists that the recipient's body will still reject the transplanted organ and attack it as a foreign object. Moreover, the number of potential donor hearts is far less than the number of patients in need of a natural heart transplant. Although use of animal hearts would lessen the problem of having fewer donors than recipients, there is an enhanced concern with respect to the rejection of the animal heart.

Please replace the paragraph beginning on page 21, at line 22, with the following rewritten paragraph:

One or more of the blocks 106 may be fixed to yoke 70 while other blocks are movable with respect to yoke 70. In Figures 3A and 3B, block 106a is fixed to an upper portion of the yoke 70. Another end block 106b is coupled to the sheaths or sleeves 110, through which the cords 108

move. The sheaths 110 may be formed as part of the block 106b, as shown in Figures 6A, 6B. The sheaths 110 would then extend through suitable apertures 111 formed within the yoke 70. Alternatively, the sheaths may be integrally formed with yoke 70. The sheaths 110 might be fixed to yoke 70 or may move proximate yoke 70. Therefore, block [106]106b may be movably coupled with respect to the yoke 70, as the sheaths 110 may slide in the apertures 111.

Please replace the paragraph beginning on page 22, at line 9, with the following rewritten paragraph:

Figures 6A and 6B illustrate a side cross-sectional view of the band 102. Each of the blocks 106 has side surfaces 112 which are juxtaposed with the similar side surfaces 112 of adjacent blocks. The side surfaces 112 are appropriately shaped and angled to cooperate when the drive system draws and puts tension on the cord 108 to draw the blocks 106 together. Depending upon the angle or shape of the block face surfaces 112, the band 102 will assume a predetermined shape, as illustrated in Figure 6B. Block 106a is fixed to the yoke 70, and also fixes one end of cord 108. In that way, when the drive apparatus draws or puts tension on cord 108, the effective length of the cord between end blocks 106a and 106b is shortened. Although end block 106b moves with respect to the yoke 70, it will eventually move against the yoke and thereby fix the other end of the band 102 in position. For example, a shoulder 113 formed on [Block]block 106b will abut against a surface of the yoke when the cord is

tensioned. Of course, block 106b might also be fixed to yoke 70. As the tensioned cord 108 between the end blocks 106a and 106b is shortened, the blocks will be drawn together such that the surfaces 112 become coextensive and define a continuous band with a predetermined shape of the actuated band 102. As shown in the Figures, the cord 108 slides freely through apertures 109 formed in the blocks 106.

Please replace the paragraph beginning on page 23, at line 11, with the following rewritten paragraph:

Figures 7A-7D illustrate a more gradual change in the spacing between the blocks 106 and the shape of the actuator band 102 when it is moved between the relaxed state and the actuated state by placing tension on cord 108. Specifically, referring to Figure 7A, the band 102 in the relaxed state is shown wherein the section of the cord 108 between the end blocks 106a and 106b is generally at its longest length so the blocks of band 102 are separated and freely conform to the distended diastolic heart. Spaces exist between the blocks 106, and the surfaces 112 are generally not touching, and at least are not coextensive with each other or forced together. Figure [8A]7A shows the band 102 in a relaxed state, and it will follow the shape of the distended heart wall exterior on which it lays.

Please replace the paragraph beginning on page 25, at line 5, with the following rewritten paragraph:

In Figures 8A and 8B, an alternative embodiment of the band 102a is illustrated in which cord 108 may move with respect to both end blocks. Specifically, the end block 106c may resemble the end block 106a such that the cord 108 moves with respect to all of the blocks of the band 102a. Figure 8B illustrates band 102a in an actuated state. Band 102a may be placed in that actuated state by movement of the cord 108 in either direction, as illustrated by reference arrows [113]117. Generally, tension will be introduced on both ends of cord 108 simultaneously, or one of the ends will be selectively fixed for moving band 102a to the actuated state.

Please replace the paragraph beginning on page 27, at line 21, with the following rewritten paragraph:

Alternatively, a separate paving membrane or element, illustrated by reference numeral 105 might be utilized with the actuator band to provide for smooth and unimpaired functioning of the band. The paving element or membrane 105 could be any suitable material which would allow the continuous and unimpaired function of the band without irritating the epicardial surface of the heart. The paving membrane should be flexible and porous so that it might [by]be deformed by the action of the actuator system to, in turn, deform the heart wall. The forces of the actuator system would therefore be transmitted to the heart, and the paving membrane 105 will absorb the friction of movement of the band 102 to protect the heart surface from abrasion, pinching, or other trauma. For example, one suitable material for the paving membrane might be a

covering of the heart surface by a mesh comprised of interlinked smooth stainless steel rings assembled in the fashion of chain mail armor.

Another example might be a loosely knitted polymer fabric "sock" over the heart surface that is studded on its outer surface by rounded-surface buttons of polished biocompatible metal or polymer.

Please replace the paragraph beginning on page 29, at line 21, with the following rewritten paragraph:

Figure 10c illustrates another embodiment wherein the blocks 106j, 106k and 106l have apertures [113]121 therethrough. A unitary resilient member [115]119 then extends through the apertures to couple the blocks together. When actuated, such as by cords 108, the embodiments of Figures 10a, 10b, and 10c assume a predetermined shape, as discussed above.

Please replace the paragraph beginning on page 30, at line 20, with the following rewritten paragraph:

Specifically, referring to Figure 11B, and Figures 3A-3B, curvature limiting bands 124 are shown illustrated with the actuator band 102. The curvature limiting bands are coupled to the actuator band, and more specifically are coupled between the actuator band and the yoke 70. The curvature limiting bands operate to limit the severity of the curvature or indentation in the heart wall 101 when the actuator band 102 is in an actuated state. That is, the bands 124 are operable for limiting the

curvature that the actuator band imposes against the indented portion of the heart wall when it is actuated. The bands 124 include one or more rigid sections 126 which would engage the exterior heart wall adjacent to the actuator band to prevent certain portions of the wall from being overly distended upon indentation at the location of the actuator bands. Rather, the heart wall 101 will follow the curvature of the rigid curvature limiting bands and take a more gradual slope from the actuator band 102, as illustrated in Figure [12B]11B. The curvature limiting bands 124 cooperate with the actuator band for shaping the heart in the desired fashion and prevent too steep of an indentation or overly extended portions of the wall, based upon the indentation. In that way, the present invention achieves a more naturally shaped heart during actuation. Similar curvature limiting bands 124 might be utilized with the embodiment of the invention illustrated in Figures 5A and 5B.

Please replace the paragraph beginning on page 36, at line 3, with the following rewritten paragraph:

Next, the free wall of the left ventricle is accessed either by retraction of the pericardium or opening of the left pleural cavity. Yoke 70 is positioned at the margins of the left ventricular free wall of the [natur4al]natural heart 10. Cords 86 may be assembled as 12 inch strands of suture with a polymer bead fused to one end and a blunt needle on the other. In that event, each suture is placed through a hole in the yoke 70, through the cardiac tissue, preferably the ventricular wall,

and through the internal stint 52 (i.e. first ring⁵⁶ or septal splint) and anchored after length adjustment, with the excess portion of the sutures cut and removed. Cords 86 are tightened to render the intrinsically flexible stint 52 relatively taut and control bulging, preferably in a rightwardly direction.